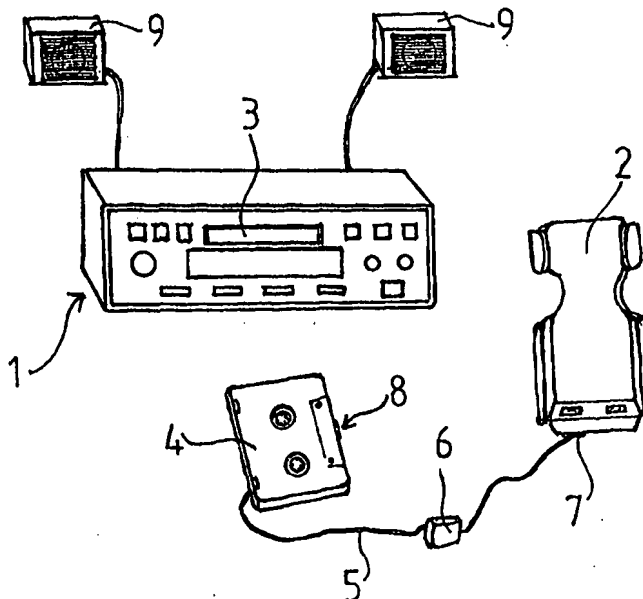




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> <b>H04M 1/60</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 00/25503</b> <b>(43) International Publication Date:</b> 4 May 2000 (04.05.00)
<b>(21) International Application Number:</b> PCT/FI99/00895 <b>(22) International Filing Date:</b> 27 October 1999 (27.10.99) <b>(30) Priority Data:</b> 982327 27 October 1998 (27.10.98) FI <b>(71) Applicant (for all designated States except US):</b> KYREL OY [FI/FI]; PL 23, FIN-39201 Kyröskoski (FI). <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> AALLOS, Sampo [FI/FI]; Ketostenkatu 15 B, FIN-33300 Tampere (FI). LEHTIMÄKI, Miikka [FI/FI]; Rinnetie 2 B 12, FIN-39200 Kyröskoski (FI). PARHANKANGAS, Simo [FI/FI]; Kivimäentie 12, FIN-39200 Kyröskoski (FI). <b>(74) Agent:</b> NIEMINEN, Taisto; Patenttitoimisto T. Nieminen Oy, Kehräsaari B, FIN-33200 Tampere (FI).		<b>(81) Designated States:</b> AU, CA, CN, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i> <i>With amended claims.</i> <i>In English translation (filed in Finnish).</i>

**(54) Title:** AN ASSEMBLY FOR HANDS-FREE FUNCTION OF A TELEPHONE

**(57) Abstract**

An assembly for hands-free-function of a mobile phone for use in a vehicle, whereat the phone is placed in a phone rack (2) in the vehicle and the vehicle furnished with a radio (1) having a cassette deck (3). The assembly comprises an adapter cassette (4) fitting in the cassette deck, in which there is a signal-sending magnetic head (8) for the receiving magnetic head in the cassette deck and communication from phone rack (2) to said cassette arranged by means of a cable (5) for replay of the voice through the cassette by means of radio loudspeakers (9).

## AN ASSEMBLY FOR HANDS-FREE FUNCTION OF A TELEPHONE

The invention relates to an assembly for hands-free function of a phone in a vehicle according to the preamble of patent claim 1, furnished with a radio or a cassette player with a sound cassette deck.

Hands-free functions in vehicles are previously known to be so arranged that in the vehicle the phone is in a phone rack and by means of separate cables a separate loudspeaker has been placed brought close to the driver's head. The assembly also comprises a hands-free unit, which is to be connected, among other things, to the power source, at least in order to carry out sound amplification imperative for the loudspeaker.

In addition to the phone rack installation, the installation of a solution of this kind is a rather complicated job. Numerous cables must be laid between phone rack, hands-free unit, loudspeaker, microphone, radio and also the power source. Among other things, quieting of radio must be controlled to become switched on when a call is arriving. It is also often complicated to locate the loudspeaker, since the radio loudspeakers are in the best places.

By means of the assembly for a hands-free function according to the invention the problem is solved simply and in a manner suited for almost all vehicles, old and new ones. The assembly according to this invention is characterized in what is presented in the preamble of the patent claims.

By means of the assembly as per the invention a remarkable improvement is achieved by assembling a hands-free function into vehicles. By means of the assembly radio quieting works automatically, no additional loudspeakers are needed, the volume of the voice can be adjusted from the radio controls and as minimum one cabling from the phone rack to the adapter cassette is enough if the assembly is done as a cable version.

The communication line between adapter and phone rack can be easily done wireless, while the microphone is kept, for instance, in the phone rack, whereat all kinds of cabling can be avoided. Naturally, the advantage of a simple hands-free function is its impact on traffic safety. The facility is easily arranged and, therefore, its use will probably become popular, reducing applications most hazardous for traffic safety.

In the following the invention is disclosed with reference to figure 1 in the enclosed drawing, where a version of the assembly of this invention is illustrated.

The figure 1 assembly is an example of a device system implementing the hands-free function of a vehicle. The vehicle has a radio 1 with a cassette deck 3 for playing an ordinary music cassette. Further, loudspeakers 9 are connected to the radio. For the use of a mobile phone there is in the vehicle a phone rack 2. In the lower part of the rack there are outlets and inlets known per se for the phone cables. In the assembly there is from the phone rack 2 outlet 7 a cable 5 to a microphone 6 placed somewhere in the cable, the cable running further to the adapter cassette 4. To the adapter cassette along cable 5 there is signal current corresponding to the voice.

The assembly includes an adapter cassette 4, which to its cover is a normal C-cassette but has no rewinding band. The cassette 4 has an in-built signal-sending magnetic head 8 at the same spot as the receiving magnetic head in the radio set, when the cassette is in place. Instead of the rewinding band the magnetic head 8 transmits the signals, i.e. in this case the arriving voice to the playing section of the radio and further to loudspeakers 9.

When there is a call to the phone in the vehicle, at first the adapter cassette 4 is inserted in cassette deck 3, whereat the radio switches off, if it has been on. If, on the other hand, one has been listening to music, it has to be switched over to

the adapter cassette. Then the arriving call can be received by means of the phone button. The voice comes from loudspeakers 9 and the own speech is directed to the microphone.

The assembly can be done by means of cable 5, whereat microphone 6 is either somewhere on cable 5, already in phone rack 2 or, for instance, in that end of adapter cassette 4, which remains visible from deck 3. Microphone 6 can be cabled also individually with its own cable to the place wanted.

In switching the communication between phone/phone rack 2 and adapter cassette 4 over to a wireless assembly, the microphone can be in the phone rack, in the cassette end, or by means of its individual cable wherever wanted. In the wireless system to the adapter cassette an individual power source must be added in addition to receipt of a message arriving wirelessly.

## CLAIMS

1. An assembly for hands-free-function of a mobile phone for use in a vehicle, whereat the phone is placed in a phone rack (2) in the vehicle and the vehicle furnished with a radio (1) having a cassette deck (3) or a playing unit, **characterized** in that the assembly comprises
  - an adapter cassette (4) fitting in cassette deck (3), in which there is a signal-sending magnetic head (8) for the receiving magnetic head in the cassette deck and
  - communication from phone or phone rack (2) to said cassette by means of a cable (5) or wirelessly arranged for replay of the voice through cassette (4) by means of the player or the radio loudspeakers (9).
2. An assembly in accordance with claim 1, where there is between phone and cassette (4) a communication cable (5) **characterized** in that microphone (6) is connected to the said communication cable.
3. An assembly in accordance with claim 1, **characterized** in that it has a separate cable for microphone (6) in order to locate it in a wanted place.
4. An assembly in accordance with any of the above claims 1 - 3 **characterized** in that at each time the sound reproduction of loudspeakers (9) can be switched over to voice re-play only inserting adapter cassette (4) in the cassette deck (3).

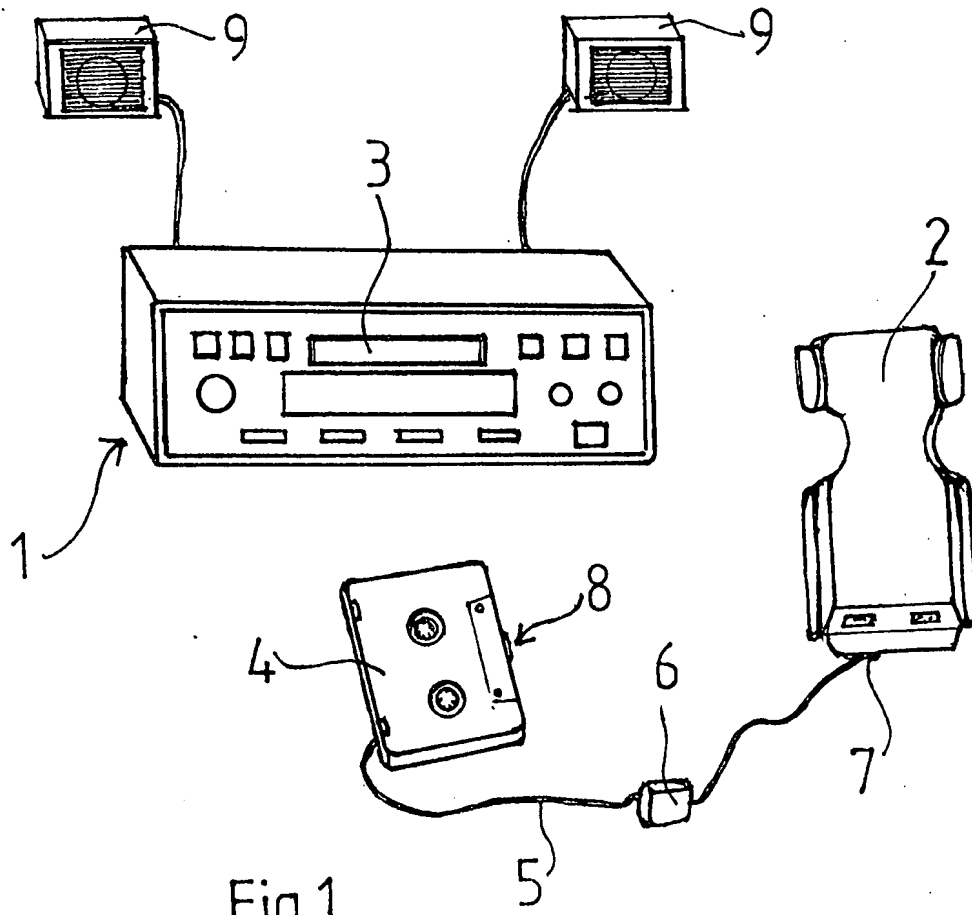


Fig.1

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 03/04489

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 H04M1/60 G11B23/04

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 H04M G11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 00 25503 A (LEHTIMAEKI MIIKKA ;PARHANKANGAS SIMO (FI); AALLOS SAMPO (FI); KYRE) 4 May 2000 (2000-05-04) the whole document	1-9
X	US 5 781 850 A (UGGE GIUSEPPE ET AL) 14 July 1998 (1998-07-14) column 2, line 43 -column 3, line 43 column 5, line 16 -column 6, line 67 claims 15,16 figures 1,4	1-9
X	US 6 058 319 A (SADLER JOHN THOMAS) 2 May 2000 (2000-05-02)	1,6
Y	abstract figures 1,4,5,7 column 2, line 34 -column 6, line 64	2-5,7-9
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

9 February 2004

Date of mailing of the international search report

18/02/2004

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